TITLE OF THE INVENTION
INTERNET ACCESS SYSTEM AND TELEPHONE DIRECTORY

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is based upon and claims the
benefit of priority from the prior Japanese Patent
Application No. 2000-307874, filed October 6, 2000, the
entire contents of which are incorporated herein by
reference.

BACKGROUND OF THE INVENTION

The present invention relates to a convenient
Internet access system and a convenient telephone
directory.

In the prior art, home pages or mail addresses on
the Internet domain are accessed by inputting Internet
domain access addresses, or URL (Uniform Resource
Locator) addresses, which comprise complex English
string code sequences.

When one accesses an information apparatus, a
communication apparatus or an information terminal of
some company or some party at the other end using the
URL address, he/she has to know the domain (URL) name.
Even if a directory search engine is used, it is
inconvenient to find the domain name unless the genre
to which a party at the other end belongs. If one
wishes to access a party at the other end on the basis
of some particle, etc. without an URL, he/she cannot
access it.

BRIEF SUMMARY OF THE INVENTION

The object of the present invention is to provide an Internet access system enabling a user to easily access a specific resource only on the basis of a

5   telephone number, and to provide a telephone directly therefor.

The subject matter of the invention relates to a system for acquiring an Internet domain address by inputting a telephone number, thus accessing an

10   information apparatus, a communication apparatus or an information terminal at the other end.

According to an aspect of the invention, there is provided an Internet access system comprising: an address acquisition section for acquiring a telephone

15   number and identification information produced by adding, to the telephone number, address presence/absence specifying information indicating at least presence/absence of an Internet domain address for identifying a resource on the Internet, and

20   acquiring an Internet domain address associated with the identification information from a database in which at least telephone numbers and Internet domain addresses are associated; and an address transmission section for sending the Internet domain address to a

25   user terminal, and prompting the user terminal to access a resource specified by the Internet domain address.

According to another aspect of the invention, there is provided an Internet access system wherein input data is analyzed to acquire at least one of correspondency information between a telephone number

5 and an Internet domain address associated with the telephone number, correspondency information between a telephone number and attribute information associated with the telephone number, and correspondency information between an Internet domain address and

10 attribute information associated with the Internet domain address.

According to still another aspect of the invention, there is provided a telephone directory comprising: a telephone number display section for associatively

15 displaying a telephone number and discrimination information for discriminating whether there is a URL address associated with the telephone number.

The invention relating the system is applicable to a method using this system.

20 The invention relating to the system or the method is applicable to a computer-readable recording medium storing a program for enabling a computer to execute a procedure corresponding to the invention (or a program for causing a computer to function as means corre-

25 sponding to the invention or causing a computer to realize a function corresponding to the invention).

Additional objects and advantages of the invention

will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and

5   obtained by means of the instrumentalities and combinations particularly pointed out hereinafter.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The accompanying drawings, which are incorporated in and constitute a part of the specification,

10   illustrate presently preferred embodiments of the invention, and together with the general description given above and the detailed description of the preferred embodiments given below, serve to explain the principles of the invention.

15   FIG. 1A and FIG. 1B show whole structures of an Internet access system according to one embodiment of the present invention;

FIG. 2 shows detailed structures of a server and a handheld information terminal according to the

20   embodiment;

FIG. 3 is a flow chart illustrating an Internet access procedure according to the embodiment;

FIG. 4A shows an example of display on an URL address select screen according to the embodiment;

25   FIG. 4B shows an example of an Internet domain address input screen;

FIG. 5 shows an example of a displayed telephone

number list of a telephone directory in a case of using
the Internet access system according to the embodiment;
and

5   FIG. 6 shows an example of the handheld
information terminal according to the embodiment.

DETAILED DESCRIPTION OF THE INVENTION

An embodiment of the present invention will now be
described with reference to the accompanying drawings.

FIGS. 1A and 1B show whole structures of an
10   Internet access system according to one embodiment of
the present invention.

As is shown in FIG. 1A, a server 1, which manages
the Internet access system, and a plurality of handheld
information terminals 2 are connected to the Internet 3.
15   The connection to the Internet 3 may be in a wired mode
or a radio (wireless, optical transmission, etc.) mode.

FIG. 2 shows detailed structures of the server 1
and handheld information terminal 2. As is shown in
FIG. 2, the server 1 has an interface 11 for
20   transmission/reception of information with the
Internet 3. A telephone number/URL address corre-
spondency analysis program 12, a telephone number
search/collection program 13 and an URL address
search/collection program 14 are connected to the
25   interface 11. The telephone number/URL address
correspondency analysis program 12 functions to analyze
an URL address in response to a request from the

handheld information terminal 2. The telephone number search/collection program 13 functions to search and collect a telephone number and attribute information associated with the telephone number from the terminal,

5 etc. connected to the Internet 3. The URL address search/collection program 14 functions to search and collect a URL address and attribute information associated with the URL address from the terminal, etc. connected to the Internet 3. The attribute information

10 in this context includes all kinds of attribute information capable of identifying users of telephone numbers, such as the names of persons, companies or organizations, jobs, general concepts of hobbies, interests, fields of study, etc., as well as categories,

15 addresses, places, or temporal information such as time and dates.

A telephone number/attribute correspondency database 16 in which telephone numbers and attribute information are associated and stored is connected to

20 the telephone number search/collection program 13 and the telephone number/URL address correspondency analysis program 12. A telephone number/URL address correspondency database 15 in which telephone numbers and URL addresses are associated and stored is

25 connected to the telephone number/URL address correspondency analysis program 12. A URL address/ attribute correspondency database 17 in which URL

addresses and attribute information are associated and
stored is connected to the telephone number/URL address
correspondency analysis program 12 and the URL address
search/collection program 14.

5   The handheld information terminal 2 comprises an
interface 23 for transmission/reception of information
with the Internet 3, a terminal database 24, a
search/storage program 21 and an information output
section 22. The terminal database 24 stores

10   information input by the user, information sent from
the server 1, and information processed by the
search/storage program 21. The search/storage program
21 is connected to the terminal database 24 and
functions to store various information in the terminal

15   database 24 and to request an access, via the Internet
3, to other terminals including the server 1 connected
to the Internet 3. The information output section 22
is connected to the search/storage program 21. The
information output section 22 displays information sent

20   from the server 1, information input by the user, and
various information processed by the search/storage
program 21. The information output section 22 may
output character information or voice information.
Accordingly, voice information or character information

25   may be input to input means (not shown) of the handheld
information terminal 2.

Methods of constructing the databases 15 to 17 in

the server 1 will now be described.

To begin with, the method of constructing the telephone number/attribute correspondency database 16 will be described.

5   On the basis of attribute information relating to a given person or company (hereinafter referred to as "to-be-registered party"), the telephone number search/collection program 13 searches countless terminals, etc. connected to the Internet 3 and finds

10   telephone numbers associated with the attribute information. For example, if a search is carried out on the basis of the attribute information of a person A (assuming that the attribute information is the name of person A) using ordinary search engines, WEB (World

15   Wide Web) pages on which the name of person A appears can be extracted. Then, the telephone number of the person A is found from among the extracted WEB pages. A WEB page contains a plurality of character information units. Based on the number of numerals

20   constituting a telephone number, telephone number candidates can be extracted from the character information units. Specifically, if the telephone number comprises 10 numerals, character information units each having 10 successive numerals are extracted.

25   Of course, since there may be character information units including hyphens "-" among numerals indicating telephone numbers, it is preferable to extract such

character information units, too. Moreover, the telephone number search/collection program 13 determines whether the extracted telephone number relates to the person A. Where contents of WEB pages, e.g. tags expressed in XML (eXtensible Markup Language) format, are successively searched, if there is information indicative of a telephone number and the name of person A in a tag set, it is determined that this telephone number identifies person A. Needless to say, the concept of "tag set" includes not only a single tag indicative of one attribute but also a set of tags which are separate but indicative one attribute.

The method of constructing the URL address/ attribute correspondency database 17 is basically similar to that of constructing the telephone number/attribute correspondency database 16, except that the telephone number is replaced with an URL address. The database 17 is constructed by the URL address search/collection program 14. Of course, since the URL address of a WEB page containing attribute information can be distinguished from other information, there is no need to perform such a procedure, as described above, for extracting a telephone number on the basis of the number of numerals.

In the above-described methods of constructing the telephone number/attribute correspondency database 16 and URL address/attribute correspondency database URL

17, where the search/collection programs 13 and 14 cannot determine whether the attribute information contained in the WEB page relates to the telephone number of URL address of person A but the WEB page

5   contains such a telephone number of URL address, the operator may display the WEB page (not shown) and check the display content. In this case, since the attribute information of person A can be displayed so as to be distinguishable from other information, the operator

10   can easily find the attribute information of person A.

The method of constructing the telephone number/URL address correspondency database 15 will now be described. At least three methods are available in constructing the telephone number/URL address

15   correspondency database 15.

A first method is used where either the URL address or the telephone number of the to-be-registered party is given in advance. Specifically, one of the URL address and the telephone number, which is not

20   given in advance but is to be found, is extracted from countless WEB pages accessible via the Internet 3. This method is substantially the same as the method of constructing the telephone number/attribute correspondency database 16 or URL address/attribute

25   correspondency database 17.

In a second method, common attribute information between the telephone number/attribute correspondency

database 16 and URL address/attribute correspondency database 17 is extracted. The telephone number and URL address associated with the common attribute information are acquired, and the acquired results are

5 registered in the telephone number/URL address correspondency database 15.

In a third method, registration is effected by the input from the user. Specifically, if the user inputs through the handheld information terminal 2 the

10 telephone number and URL address relating to the to-be-registered party having some attribute information, the input information is directly registered in the telephone number/URL address correspondency database 15.

Where the registration is performed by the third

15 method, the user can request registration with plural URL addresses associated. For example, the URL address of the headquarters of some company and the URL address of a branch office of this company may be associated in the registration (hereinafter such associatively

20 registered plural URL addresses are referred to as "URL address set"). In this case, in addition, the telephone number may be associated in accordance with the hierarchical order of URL addresses. That is, the top page of the URL address may be associated with a

25 given page accessible from this top page. For example, where the URL address "http://www.ir.ct.com" of a certain top page is associated with the telephone

number "03-3000-0000" in registration, the URL address
"http://www.ir.ct.com/es" which is lower in order than
the URL address of the top page may be associated with
the telephone number "03-3000-0000-001" which is formed
5   by adding information "001" indicative of a lower-order
URL address to the end of the telephone number
"03-3000-0000".

An Internet access method using the thus
constructed databases 15 to 17 will now be described
10   with reference to a flow chart of FIG. 3.

The user accesses the Internet 3, using the
handheld information terminal 2, and requests access to
the server 1 which manages the Internet access system
of the present invention (s1). Upon receiving the
15   request, the server 1 causes the information output
section 22 of handheld information terminal 2 to
display a telephone number input screen, thus prompting
input of the telephone number (s2). The user inputs
the telephone number relating to, e.g. the desired
20   access, through the displayed input screen. As regards
the method of input, numerical characters may be input
one by one, or the terminal database 24 may be searched
to extract the already registered telephone number.
The thus input telephone number is sent to the server 1
25   (s3). The telephone number/URL address correspondency
analysis program 12 extracts, from the telephone
number/URL address correspondency database 15, the URL

address set consisting of plural URL addresses
including the URL address associated with the received
telephone number (s4). The URL address select screen
including the URL address set is displayed (s5).

5   FIG. 4A shows an example of display on the URL address
select screen. The user confirms the display on the
information output section 22 of handheld information
terminal 2 and selects the desired URL address. The
operation for selection may be freely selective. For

10   example, the cursor is moved on the screen displayed on
the information output section 22, using the input
means (not shown) provided on the handheld information
terminal 2, and presses a decision button when the
cursor has reached the desired URL address. For

15   example, new registration buttons 41 and 42 may be
provided using the URL address select screen, and new
registration of a company or a person may be prompted.
The information selected by the user is sent to the
server 1 (s6). The telephone number/URL address

20   correspondency analysis program 12 extracts the URL
address associated with the obtained select information
from the database 15, sends the URL address to the
handheld information terminal 2 and causes the
information output section 2 to display a confirmation

25   screen including this URL address (s7). The
confirmation screen may be the same as the URL address
select screen shown in FIG. 4A. In this case, a URL

address display section and an access request button

may be provided on the URL address select screen. The

user views the confirmation screen displayed on the

information output section 2 and determines whether

5   the displayed URL address is the desired URL address.

If it is the desired address, an access request

button, for instance, is pressed to output to the

search/storage program 21 URL specifying information

which specifies the determined URL address. The

10   search/storage program 21 requests access to the URL

address specified by the URL specifying information

(s8). With the access request, a desired resource (e.g.

a desired terminal) indicated by the desired URL

address can be accessed.

15   FIG. 5 shows an example of a telephone number

display list of a telephone directory in a case where

the Internet access system with the above structure is

used. Where the system is constructed as described

above, it is easily understood, as is shown in FIG. 5,

20   that a telephone number with identification information

"*" at the top thereof, among telephone numbers listed

in the telephone directory, is not merely a telephone

number for requesting a call, but a telephone number

associated with an URL address. Moreover, the

25   identification information "*" actually indicates an

URL address which can be accessed by inputting the

telephone number with this identification information.

Accordingly, this telephone directory has both the
function of a telephone directory listing telephone
numbers and the function of a URL address list. As a
result, there is no need to prepare a URL address

5   directory in addition to a telephone directory. Of
course, for editors of telephone number directories,
there is no need to provide a URL address column to the
telephone directory, or a list for URL addresses. By
adding the identification information "*" to the

10   currently available telephone directory, this telephone
directory may be sold as an URL address directory.
Needless to say, such a telephone directory may be
printed on paper or displayed on information display
means such as a CRT of a computer.

15   As has been described above, according to the
embodiment of the invention, the user can access a
desired resource (e.g. a desired terminal) without
inputting a URL address, which is troublesome and time-
consuming. Furthermore, since the already available

20   telephone number is used as the identification
information for identifying the party to be called,
the identification information for identifying the
party to be accessed can be acquired without producing
identification information independently in addition to

25   the already available identification information. It
should suffice if digital identification information
indicating whether there is registration of URL address

is newly added to the already available information.

Even a user who does not know a certain URL address

itself can search for the URL address by the programs

12 to 14 on the basis of attribute information

5 specifying a resource to be accessed, only if he/she

knows such attribute information. Thus, the user can

access the desired resource on the basis of the

attribute information alone. In a case of a terminal

in which software for inputting Chinese characters is

10 not installed, an Internet domain address including a

Chinese character cannot be input. However, according

to the present invention, there arises no problem if

symbol "*" can be input as identification information,

other than numerals or Chinese characters. Thus, it is

15 not necessary that the terminal be equipped with

Chinese character inputting software.

The present invention is not limited to the above

embodiment. In the above embodiment, the server 1 and

handheld information terminal 2 are employed by way of

20 example. However, as shown in FIG. 1B, the handheld

information terminal 2 may be replaced with a desktop

terminal 4. In the above embodiment, the URL address

is used as the Internet domain address. However, it is

possible to use, in addition to the URL address, any

25 resource specifying information (e.g. Internet domain

address) for distinguishing one resource from another,

which is connected to the network.

Where the present invention is applied to the

desktop terminal 4, etc. having a keyboard capable of

inputting characters by pressing the associated keys

which correspond to alphabet and numerals in one-to-one

5 correspondency, it is possible to input characters to

an Internet domain address input section (address bar)

on a telephone number input screen. In this case, both

the ordinary Internet domain address and the telephone

number can be input to the Internet domain address

10 input section. Thus, software for distinguishing

addresses and telephone numbers is used. FIG. 4B shows

an example of the Internet domain address input screen

including an address bar 401. This software performs

morphological analysis and/or syntactic analysis of

15 characters input to the address bar 401. Preferably,

where the input characters begin with "http", they are

determined to indicate an Internet domain address.

Otherwise, the input characters are determined to

indicate a telephone number. Where the Internet domain

20 address has been input, the software may cause the

telephone number/URL address correspondency analysis

program 12 to extract, from the telephone number/URL

address correspondency database 15, the telephone

number associated with the input address, and the

25 obtained telephone number may be displayed on the

screen. Thereby, the user can easily ask a question or

make a complaint by dialing the obtained telephone

number with respect to the resource accessed based on the Internet domain address.

In the case of the desktop terminal 4, it is preferable to input a hyphenated telephone number. For example, telephone number "*0123456789" is input as "*012-345-6789". The telephone number including hyphens "-" is discriminated. However, even whether the terminal employed is the desktop terminal 4 or the handheld information terminal 2, and even whether the telephone number is hyphenated or not, the telephone number should preferably be identified.

The present embodiment is applicable to worldwide telephone numbers. Where the present system is commonly used worldwide, it is possible to add character information, such as alphabet or numerals, to the identification information "*". For example, character information, such as "jpn" for Japan, "usa" for the U.S, or "chn" for China, may be added as country identification information for identifying countries. On the input screen described in connection with step (s2), the input of the telephone number may be prompted and the selection of the country associated with the request for access may also be prompted. In this case, the country associated with the request for access may be selected by selecting image information on national flags displayed on the input screen.

Although FIG. 3 shows the case of separately

inputting and selecting the telephone number, the

selection operation may be omitted and the URL address

may be sent from the server 1 to the terminal 2 in

response to the input of the telephone number. In

5 addition, in the above embodiment, after the telephone

number is selected, the URL address is sent and

delivered to the information output section 22 of the

terminal 2. For example, if the terminal 2 is set such

that "http://www." is output on the URL address display

10 section by pressing "*" on the input screen, only the

subsequent address may be input and quick access to the

desired terminal, etc. is enabled. Besides, the

terminal 2 may be set such that "co.jp/" or "co.jp/i/"

may be displayed by pressing "#" on the input screen.

15 FIG. 6 shows an example of the handheld information

terminal 2 having a "*" button 61 and a "#" button 62.

With these settings, the user can access the desired

terminal only by inputting "*telephone number#". As a

result, the presence of a home page can be emphasized

20 and stressed on the telephone directory, etc. without

incurring an excess cost.

In the above embodiment, the URL address and the

telephone number for call are distinguished by adding

to the telephone number the address presence/absence

25 specifying information "*" indicating that the URL

address is associated with the telephone number.

Needless to say, this invention is not limited to this

embodiment. Other identification information may be added as the address presence/absence specifying information in place of the above information "*". The server 1 may function not only to provide the above WEB

5   page accessing services, but also to provide line connection services between information terminals in response to call requests. In this case, it is desirable to provide, between the interface 11 of server 1 and the programs 12 to 14, discrimination

10   means for discriminating the telephone number for call request and the telephone number for WEB page access. This discrimination means determines whether the telephone number sent from the information terminal includes URL address presence/absence specifying

15   information "*". If it includes the URL address presence/absence specifying information "*", it is determined that the access to the WEB page is requested, and the access connection service is provided by the operation according to the above-described embodiment.

20   If the telephone number sent from the information terminal does not include URL address presence/absence specifying information "*", it is determined that a telephone call is requested, and the line connection for a call between information terminals is effected.

25   As has been described above in detail, according to the present invention, a resouce (e.g. a desired terminal) can easily be accessed without inputting an

Internet domain address, which is troublesome and
time-consuming.

Additional advantages and modifications will
readily occur to those skilled in the art. Therefore,
5   the invention in its broader aspects is not limited to
the specific details and representative embodiments
shown and described herein. Accordingly, various
modifications may be made without departing from the
spirit or scope of the general inventive concept as
10   defined by the appended claims and their equivalents.